





PROJECT NAME: T.M.O. BELLEVUE  
HUB AREA: BELLEVUE  
NODE #(s): TMOSE-116  
LOCATION: BELLEVUE, WA 98004  
POLE TYPE: NEW CONCRETE POLE  
COORDINATES: LAT: 47.610214, LONG: -122.202582

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D1.1	CONSTRUCTION DETAILS	4
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CROWN CASTLE  
1505 WESTLAKE AVE. N.  
SUITE 800  
SEATTLE, WA 98109  
PH: 206.336.3214

RECORD DRAWINGS ISSUE DATE: SAMPLE CD



Shift Companies, LLC  
3334 N. 20TH STREET  
PHOENIX, ARIZONA 85016  
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DATE	SUBMITTAL
06.04.2018	1st SUBMITTAL

REVISIONS		
NO.	DATE	COMMENT

PROJECT NAME  
T.M.O. BELLEVUE

NODE NUMBER  
TMOSE-116

NODE ADDRESS  
BELLEVUE, WA 98004

LAT: 47.610214,  
LONG: -122.202582

SHIFT JOB NUMBER  
170603

IN HOUSE  
DRAWN BY: KON  
CHECKED BY: CM

SHEET TITLE  
TITLE SHEET

SHEET NUMBER  
1

PAGE  
1 OF 5

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

CROWN CASTLE REVIEW

TEAM MEMBER'S REVIEW:	REVIEWED/DATE:
R.F. ENGINEERING:	
PRODUCT MANAGEMENT:	
NETWORK REAL ESTATE TEAM:	
UTILITY TEAM:	
IMPLEMENTATION:	
OPERATIONS:	

PROJECT SPECIFICATIONS PERFORMED TO COMPLY WITH NSS: ###

PROJECT TEAM

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STRUCTURAL  
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Address: -  
Phone: -  
Email: -  
Contact: -

RF ENGINEER  
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FIBER ENGINEERING  
Company: T.B.D.  
Address: -  
Phone: -  
Email: -  
Contact: -

PROJECT DESCRIPTION

CROWN CASTLE PROPOSES TO PROVIDE AN ENHANCED RESIDENTIAL WIRELESS COMMUNICATIONS SYSTEM THAT WILL IMPROVE CELLULAR COMMUNICATIONS AND INCREASE CALL CAPACITY. THE NETWORK AND ASSOCIATED EQUIPMENT HAVE BEEN DESIGNED TO MINIMIZE VISUAL IMPACTS IN URBAN SETTINGS. THE PROPOSED SYSTEM WILL PROVIDE A CELLULAR NETWORK THAT CAN BE UTILIZED SIMULTANEOUSLY BY DIFFERENT LICENSED TELECOMMUNICATIONS COMPANIES.

PROJECT INFORMATION

JURISDICTION:  
CITY OF BELLEVUE  
TRANSPORTATION DEPARTMENT  
450 110TH AVE. N.E.  
BELLEVUE, WA 98004  
PH: 425.452.6856  
CONTACT: T.B.D.

APPLICANT:  
CROWN CASTLE  
1505 WESTLAKE AVE. N.  
SUITE 800  
SEATTLE, WA 98109  
PH: 206.336.3214

CODES:  
2015 INTERNATIONAL BUILDING CODE (IBC)  
2017 NATIONAL ELECTRICAL CODE (NEC)

NOTE:  
NO PROPOSED STORM SEWER,  
WASTEWATER, OR WATER WORK IS  
SHOWN ON THIS PLAN SET, NOR  
INCLUDED IN THIS WORK SCOPE.

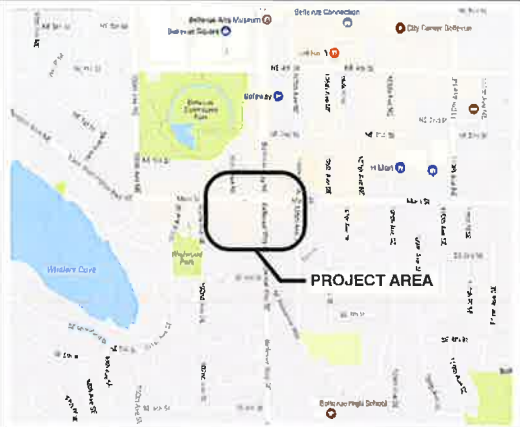
GENERAL PROJECT NOTES

- RIGHT-OF-WAY USE PERMIT SHALL BE OBTAINED BY CONTRACTOR PRIOR TO COMMENCING WORK.
- A UTILITY LOCATE IS REQUIRED FOR ALL PROJECTS.
- CROSSING OF EXISTING UTILITIES SHALL BE COORDINATED BY CONTRACTOR.
- ALL WORK TO BE CONDUCTED IN CITY RIGHT OF WAY, U.N.O.
- ALL DISTURBED LANDSCAPING SHALL BE REPLACED TO SIMILAR EXISTING CONDITION.
- ALL SURFACE REPAIR SHALL BE TO CITY SPECIFICATIONS.
- ANY SIDEWALK CLOSURE SHALL BE COORDINATED WITH THE CITY AND PROPER SIGNAGE WILL BE PLACED.
- TEMPORARY LIGHTING WILL BE COORDINATED WITH CITY AND PROVIDED WHENEVER EXISTING LIGHTING IS REMOVED OR UNAVAILABLE AS REQUIRED.
- NO MATERIALS OR EQUIPMENT SHALL BE STORED ON PRIVATE PROPERTY OR BLOCK ACCESS TO PRIVATE PROPERTY.
- OPEN EXCAVATIONS SHALL BE PROPERLY GUARDED AND SIGNED. NO OPEN EXCAVATIONS WILL BE LEFT ACCESSIBLE TO THE PUBLIC.
- CLEANUP OF THE WORK AREA WILL BE COMPLETED EACH EVENING AND THE PROJECT AREA WILL BE RETURNED TO EXISTING CONDITION AT THE COMPLETION OF CONSTRUCTION AT EACH NODE LOCATION.
- ALL WORK TO COMPLY WITH OSHA AND CITY GUIDELINES.
- CONTRACTOR WILL BE RESPONSIBLE FOR LOCATING PRIVATE IRRIGATION PRIOR TO EXCAVATION. CONTRACTOR WILL REPAIR OR REROUTE IRRIGATION IN ROW AS NECESSARY.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO REMOVE AND REPLACE, AT THEIR COST, ANY AND ALL DAMAGED PAVEMENT, SIDEWALK, CURB AND GUTTER OUTSIDE THE PAY LIMIT, DAMAGE DUE TO THEIR ACTIVITIES ON THE PROJECT. THIS INCLUDES, BUT IS NOT LIMITED TO THE REMOVAL AND REPLACEMENT OF NEWLY CRACKED, THE REMOVAL AND REPLACEMENT OF EXISTING CRACKS WHERE THE CRACKS HAVE BEEN ENLARGED DUE TO THE CONTRACTORS OPERATIONS, THE REMOVAL AND REPLACEMENT OF DEFORMED PAVEMENT, CURB AND GUTTER, SIDEWALK, ETC.. ALL SAW CUTS USED FOR THE REMOVAL OF THESE ITEMS SHALL BE PERPENDICULAR AND PARALLEL TO THE CENTERLINE CONTROLLING THAT ITEM, OR AT THE DISCRETION OF THE CITY INSPECTOR.
- THE VAULTS INSTALLED IN CONJUNCTION WITH THE INDIVIDUAL ANTENNA NODES SHALL BE FLUSH WITH THE GROUND.

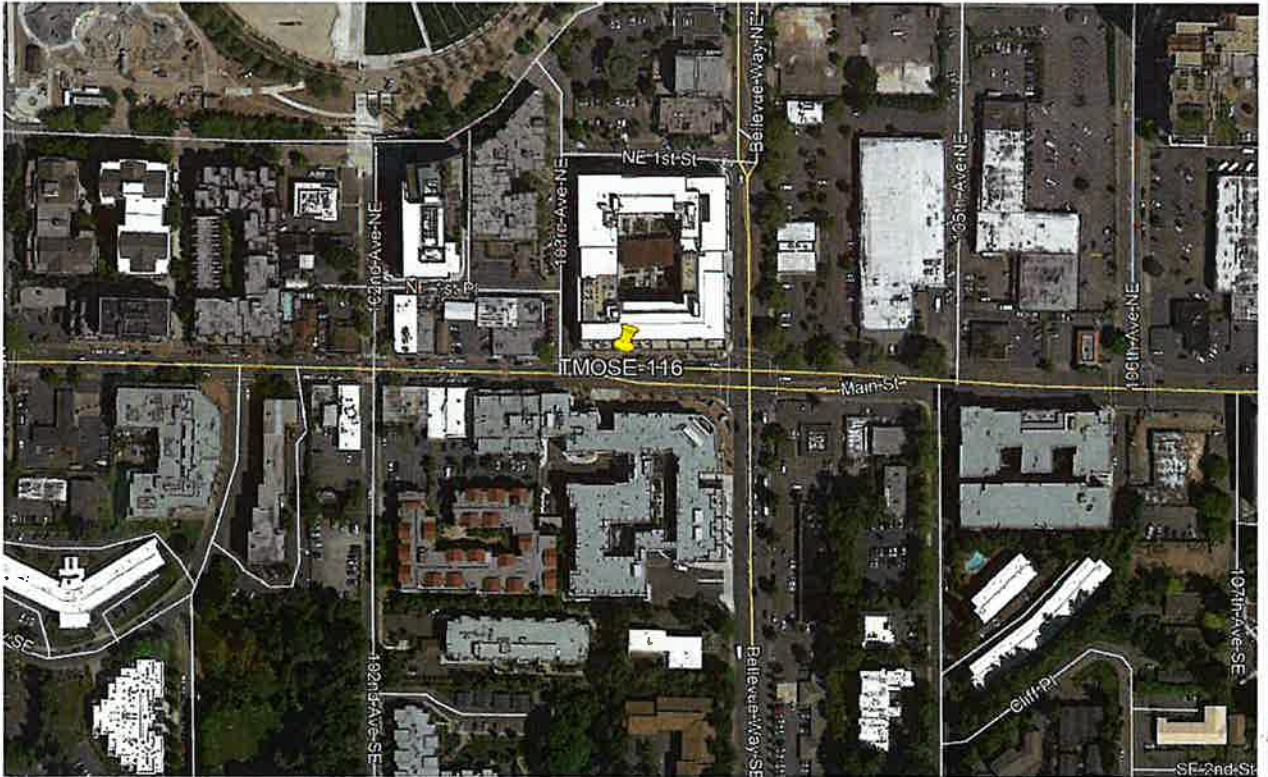
ABBREVIATIONS AND SYMBOLS

	REVISION		CENTER LINE
	KEY NOTE		RIGHT-OF-WAY/PROPERTY LINE
	ELEVATION REFERENCE		FIBER
	ELEVATION MARKER		GAS
	ANTENNA AZIMUTH		POWER
	VIEW NUMBER		SANITARY SEWER
	SHEET NUMBER		STORM DRAIN
			WATER
			OVERHEAD POWER LINE

AREA MAP



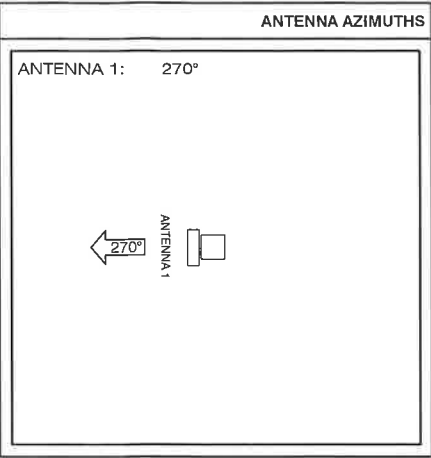
NODE LOCATION MAP





KEYNOTE LEGEND		
KEYNOTE	DESCRIPTION	DETAIL
A01	NEW CROWN CASTLE ANTENNA INTEGRATED WITH RADIO	16/D1.1
A02	N/A	
A03	RF WARNING SIGNAGE	1/A1.2
A04	NEW CONCRETE POLE	20/D1.1
A05	CROWN CASTLE 24"x36" UNDERGROUND CONC. FIBER VAULT WITH CROWN CASTLE LABEL	SEE FIBER PLAN
A06	NEW CROWN CASTLE NODE IDENTIFICATION SIGNAGE (BOTTOM OF POLE)	5/A1.2
A07	NEW ELECTRICAL HAND HOLE	
A08	PROPOSED CROWN CASTLE PIER FOUNDATION	16/D1.1

KEYNOTE LEGEND		
KEYNOTE	DESCRIPTION	DETAIL
U01	NEW 2" CROWN CASTLE U.G. POWER CONDUIT (APPROXIMATE LOCATION, F.V.)	20/D1.1
U02	NEW CROWN CASTLE 1-1/4" U.G. FIBER CONDUIT BY OTHERS (APPROXIMATE LOCATION, F.V.)	20/D1.1



- GENERAL NOTES
1. PAINT PROPOSED GROUND EQUIPMENT A NATURAL EARTH COLOR OR AS APPROVED BY CITY.
  2. CONTRACTOR TO FIELD LOCATE EXIST, UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION
  3. EX. LANDSCAPE PLANTINGS AND DECORATIVE HARDSCAPES DISTURBED OR DESTROYED AS A RESULT OF CONSTRUCTION SHALL BE REPLACED WITH A LIKE SIZE AND SPECIE.
  4. CONTRACTOR TO HAND LOCATE EX. IRRIGATION PRIOR TO EXCAVATION.
  5. SITE PLAN IS A DIAGRAMMATIC REPRESENTATION ONLY; VERIFY ALL DIMENSIONS.
  6. VERIFY ALL PROPERTY LINE INFORMATION WITH AVAILABLE R.O.W. DATA.
  7. EXIST. UTILITY LOCATIONS SHOWN ON PLANS ARE APPROXIMATE ONLY (AS PROVIDED BY LOCAL UTILITIES).



SUBJECT POLE: TMOSE-116

GPS COORDINATES:  
LAT: 47.610214,  
LONG: -122.202582

POLE TYPE: NEW CONCRETE POLE  
POLE ID #: ID#

ANTENNA RAD CENTER: 36' - 0" A.F.G.

SUBJECT POLE IS LOCATED IN: CITY OF BELLEVUE R.O.W.

**CROWN CASTLE**  
CROWN CASTLE  
1505 WESTLAKE AVE. N.  
SUITE 800  
SEATTLE, WA 98109  
PH: 206.336.3214

RECORD DRAWINGS ISSUE DATE: SAMPLE CD

**SHIFT**  
Shift Companies, LLC  
3334 N. 20TH STREET  
PHOENIX, ARIZONA 85016  
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fax: 480.264.0163

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NODE NUMBER  
TMOSE-116

NODE ADDRESS  
BELLEVUE, WA 98004

LAT: 47.610214,  
LONG: -122.202582

SHIFT JOB NUMBER  
170603

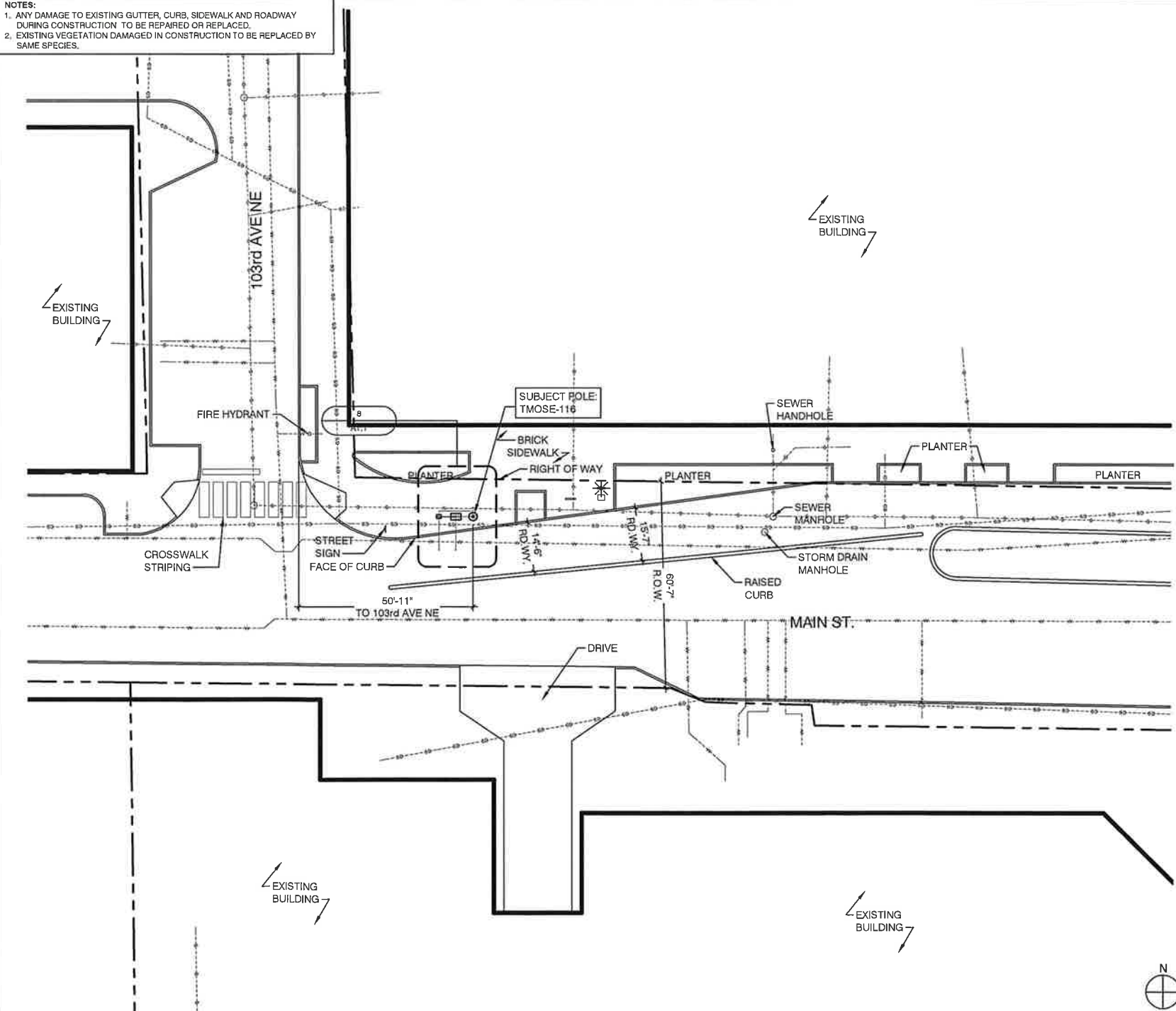
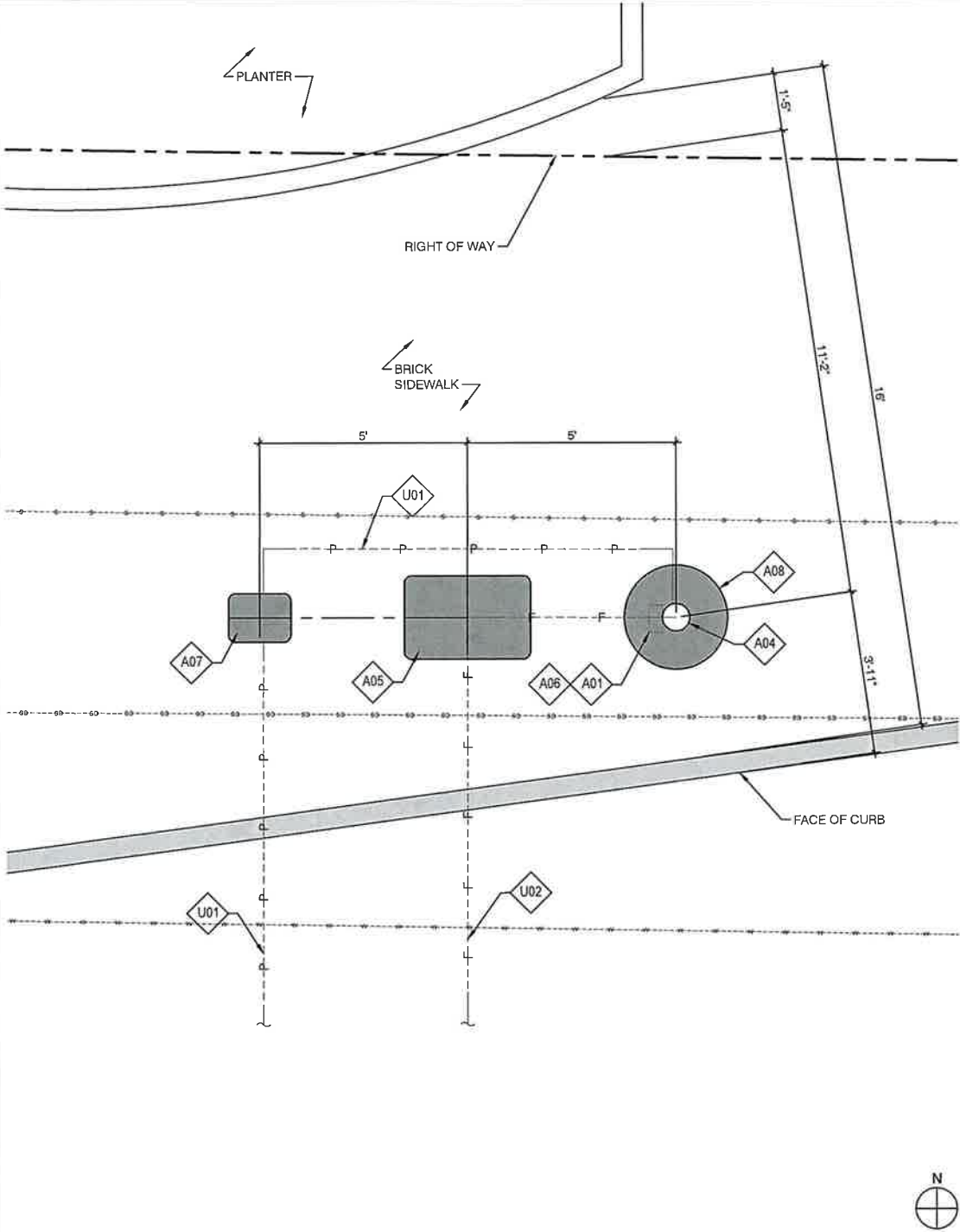
IN HOUSE  
DRAWN BY: KON  
CHECKED BY: CM

SHEET TITLE  
SITE PLAN, EQUIPMENT  
AND ANTENNA PLAN

SHEET NUMBER  
A1.1

PAGE  
2 OF 5


PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"



C:\Users\micha\Desktop\KONTEXTURE\SHIFT COMPANIES\00-TMOSE-116\TMOSE-116.dwg



C:\Users\michal\Desktop\KONTEXTURE\SHIFT COMPANIES\00-TMOSE 116\TMOSE-116.dwg




NOTICE

The radio frequency (RF) emissions at this site have been evaluated for potential RF exposure to personnel who may need to work near these antennae.

RF EXPOSURE AT FEET OR CLOSER TO THE FACE OF THE ANTENNA MAY EXCEED THE FCC PUBLIC EXPOSURE STANDARD AND THUS ONLY QUALIFIED RF WORKERS MAY WORK IN THIS FOOT EXCLUSION ZONE. OTHERS WHO NEED TO WORK IN THE EXCLUSION ZONE SHOULD CALL: 888-632-0931 FOR INSTRUCTIONS PRIOR TO COMMENCING WORK.

REFER TO SITE:



RF WARNING SIGNAGE

SCALE: NTS1



POLE LOCATION PHOTO (EXISTING)SCALE: N.T.S.4

Crown Castle DAS

24-HOUR  
Emergency #  
888-632-0931

Site ID# --

Sign background to be black in color

Lettering to be white in color

NOTE  
SIGN TO BE 5' x 5' DECAL, MOUNTED TO STAINLESS STEEL PLATE. PLATE TO BE ATTACHED TO POLE WITH METAL STRAPS @ 7'-0" A.G.L.

NODE IDENTIFICATION SIGNAGE

SCALE: NTS5



POLE LOCATION PHOTO (PROPOSED)SCALE: N.T.S.12

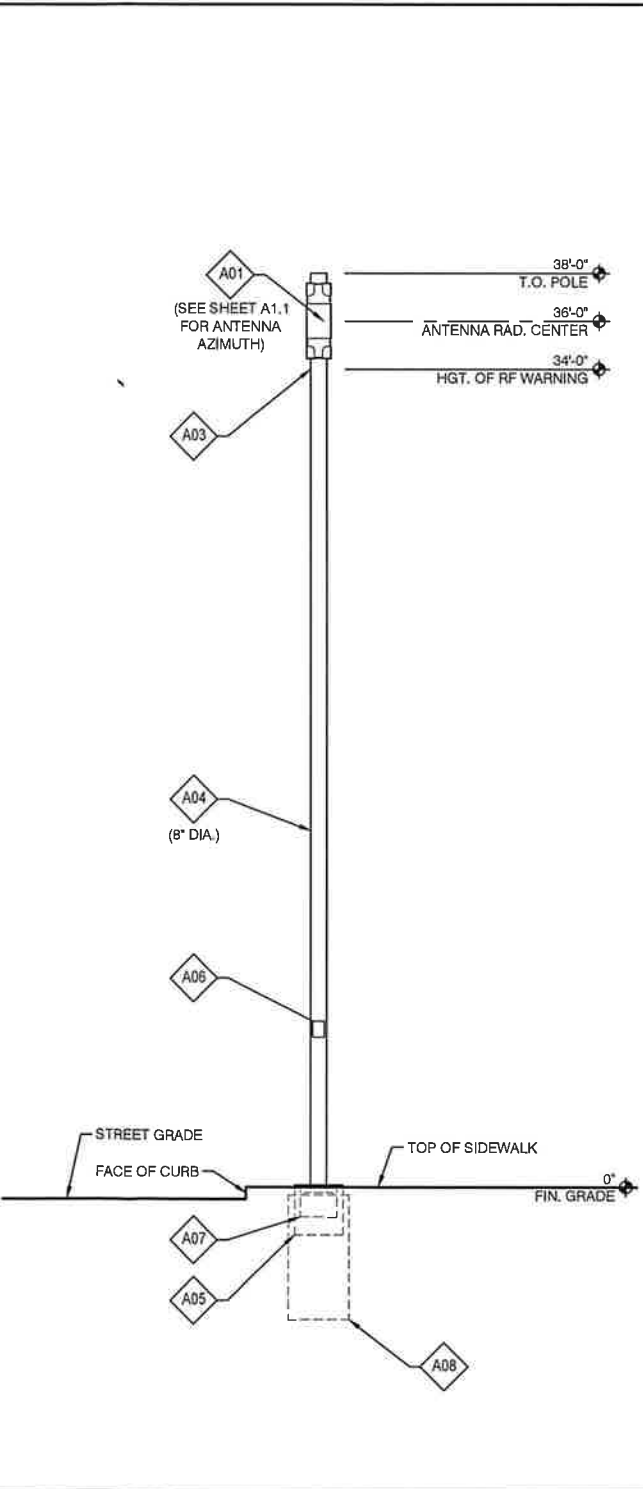
KEYNOTE LEGEND		
KEYNOTE	DESCRIPTION	DETAIL
A01	NEW CROWN CASTLE ANTENNA INTEGRATED WITH RADIO	18/D1.1
A02	N/A	
A03	RF WARNING SIGNAGE	1/A1.2
A04	NEW CONCRETE POLE	20/D1.1
A05	CROWN CASTLE 24"x36" UNDERGROUND CONC. FIBER VAULT WITH CROWN CASTLE LABEL	SEE FIBER PLAN
A06	NEW CROWN CASTLE NODE IDENTIFICATION SIGNAGE (BOTTOM OF POLE)	5/A1.2
A07	NEW ELECTRICAL HAND HOLE	
A08	PROPOSED CROWN CASTLE PIER FOUNDATION	16/D1.1

PROPOSED POLE WIDTH = 8" SQUARE  
PROPOSED POLE HEIGHT = 38' - 0"

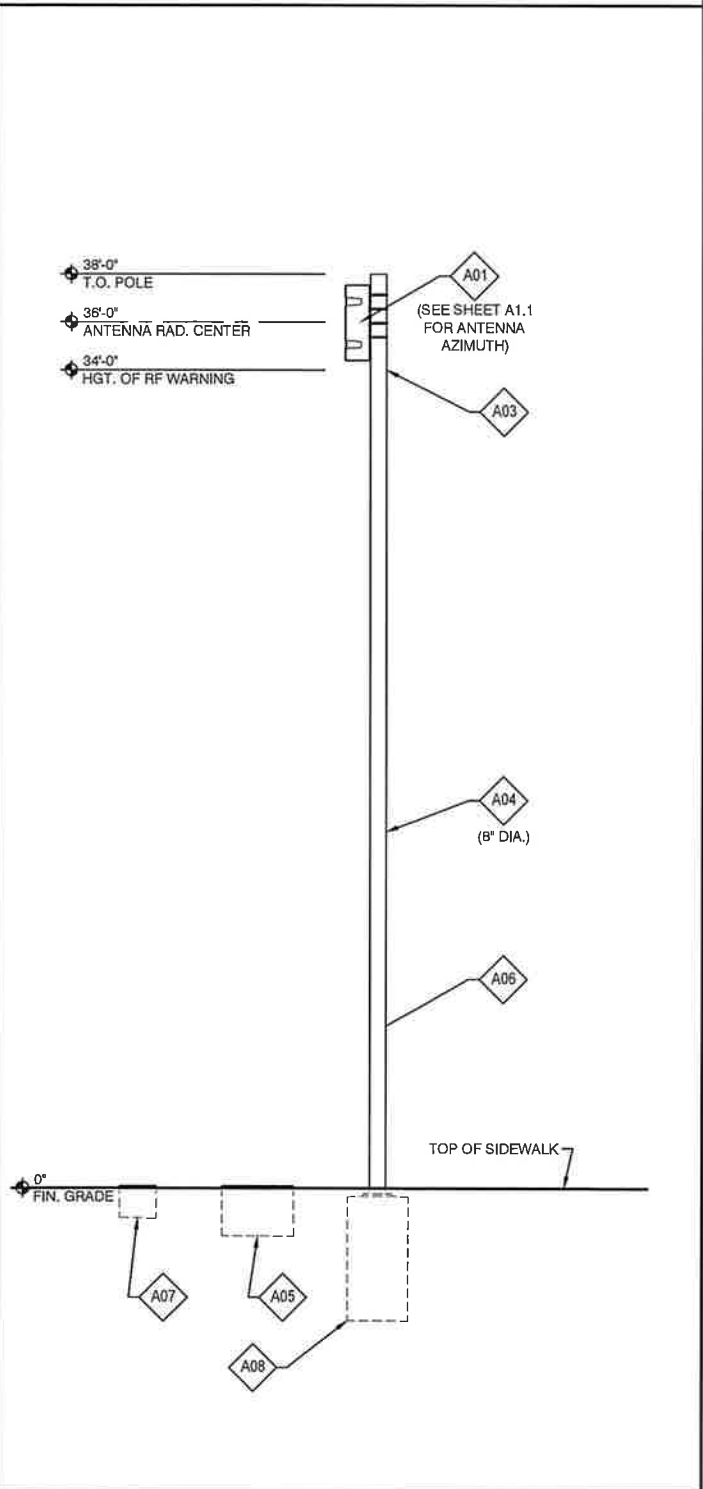
PROPOSED POLE COLOR = GRAY

SEE DETAIL 16 / D1.1 FOR RADIO INFO AND SPEC'S.


POLE, EQUIPMENT CABINET, RADIO INFO.



SIDE VIEW (PROPOSED)SCALE: 1/4" = 1'-0"16



STREET VIEW (PROPOSED)SCALE: 1/4" = 1'-0"20



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1505 WESTLAKE AVE. N.  
SUITE 800  
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PH: 206.336.3214

RECORD DRAWINGS ISSUE DATE: SAMPLE CD

SHIFT

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06.04.2018	1st SUBMITTAL

REVISIONS

NO.	DATE	COMMENT

PROJECT NAME

T.M.O. BELLEVUE

NODE NUMBER

TMOSE-116

NODE ADDRESS

BELLEVUE, WA 98004

LAT: 47.610214,  
LONG: -122.202582

SHIFT JOB NUMBER

170603

IN HOUSE

DRAWN BY: KON  
CHECKED BY: CM

SHEET TITLE

POLE ELEVATION,  
PROPOSED

SHEET NUMBER

A1.2

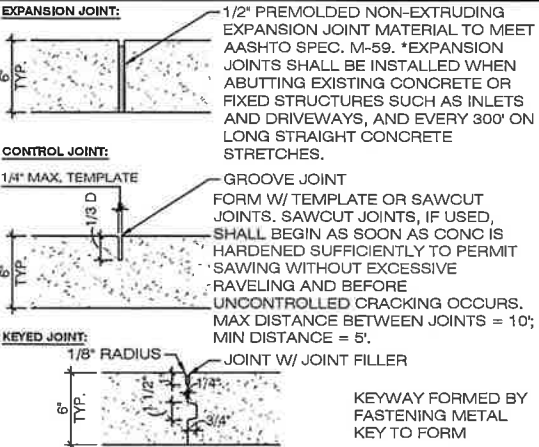
PAGE

3 OF 5

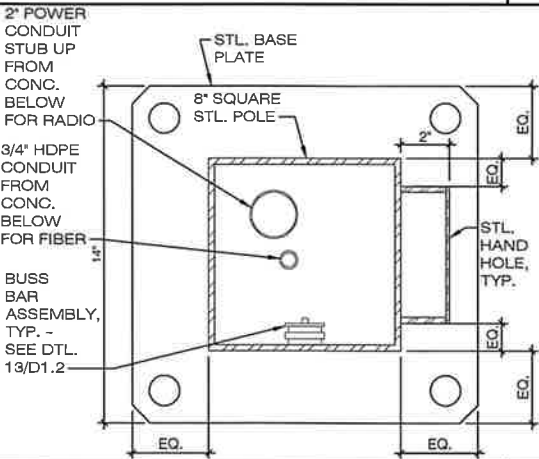
PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"



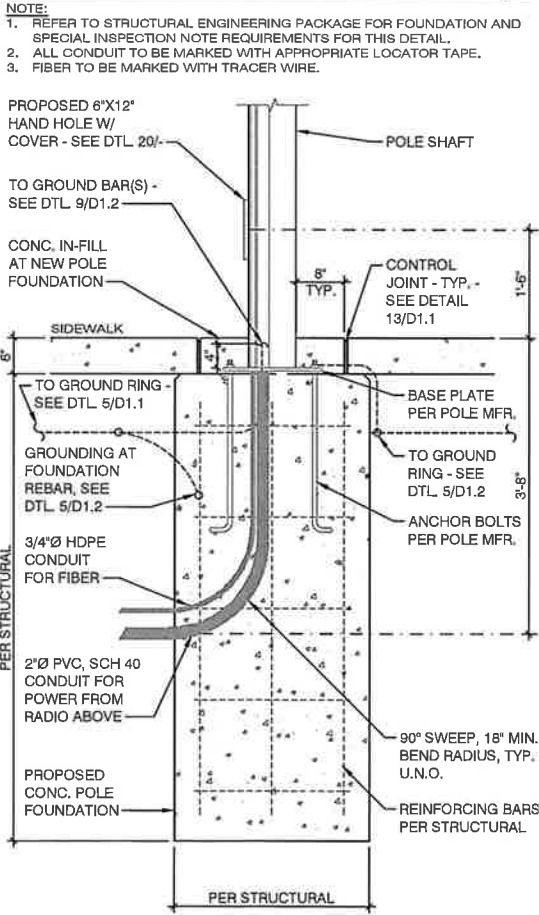
C:\Users\micha\Desktop\KONTEXTURE\SHIFT COMPANIES\D1.1+D1.2.dwg



CONCRETE JOINT DETAILS SCALE:N.T.S. 13



PLAN VIEW @ METAL POLE SCALE:N.T.S. 14



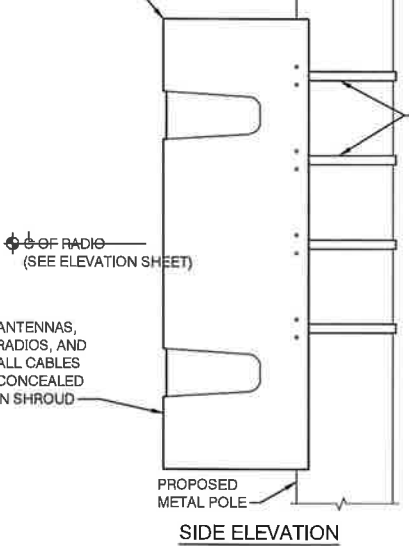
FOUNDATION DETAIL SCALE:N.T.S. 16

MODEL:	NOKIA RRH "3 UNIT FACE OUT"
LENGTH:	37.4"
WIDTH:	12.3"
DEPTH:	12"
WEIGHT:	90 LBS.

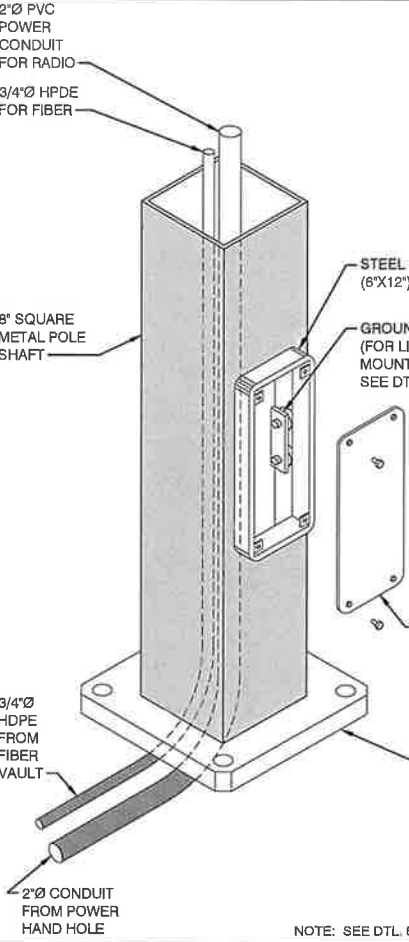
PROPOSED RADIO WITH INTEGRATED ANTENNA SPECS

ANTENNAS, RADIOS, AND ALL CABLES CONCEALED IN SHROUD


PROPOSED RADIO WITH INTEGRATED ANTENNA - SEE ELEVATION SHEET (PROPOSED ANTENNA SPECS.)



RADIO WITH INEGATED ANTENNA DETAIL SCALE:N.T.S. 18




POLE ISOMETRIC - W/ LIGHT FIXTURE SCALE:N.T.S. 20



**CROWN CASTLE**  
1505 WESTLAKE AVE. N.  
SUITE 800  
SEATTLE, WA 98109  
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NODE ADDRESS

SHIFT JOB NUMBER

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IN HOUSE

DRAWN BY: KON  
CHECKED BY: CM

SHEET TITLE

CONSTRUCTION DETAILS

SHEET NUMBER

D1.1

PAGE

4 OF 5

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

FOR ALL COAX WATERPROOFING INSTALLATIONS, SEE  
INSTALLATION INSTRUCTIONS FOR

**JMA WIRELESS "JMA WEATHER PROTECTION SYSTEM"**

- 1) FOR 1/2" CONNECTIONS TO ANTENNA OR DEVICE
- 2) FOR 1/2" CONNECTIONS TO ANTENNA OR DEVICE  
USING WPS-DF-CUTTER
- 3) FOR WPS-N, 1/2" NM CONNECTOR TO PORT
- 4) FOR WPS-DRA, MALE TO PORT
- 5) FOR 1/4" CONNECTIONS TO ANTENNA OR DEVICE

**NOTES:**

1. VERIFY LIGHT GROUNDING REQUIREMENTS FOR LIGHT ARMS WHEN APPLICABLE.
2. ALL GROUND BARS ASSOCIATED WITH POLE TO BE MOUNTED AT INTERIOR (SCREENED FROM VIEW).
3. MOUNT ANTENNA GROUND BUSS VERTICALLY BEHIND LOWER ANTENNA ARRAY.
4. ALL CONNECTORS TO BE DOUBLE LUG.
5. GROUND BAR KITS TO INCLUDE:  
1/4" THICK TIN COPPER BUSS BAR, SS BRACKET, INSULATOR OR EQUIVALENT, 3/8"Ø BOLT AND LOCKWASHER.

NOTES:

1. ALL CONNECTORS MUST BE DOUBLE LUG.
2. MOUNT ANTENNA GROUND BUSS VERTICALLY BEHIND LOWER ANTENNA ARRAY

COPPER GROUND BUSS BAR

PLASTIC INSULATOR

#5 CU GROUND KIT (TYP. FOR EA. COAX RUN)

TO MGB

ANTENNA GROUND BUSS (SIZE AS NEEDED), TINNED COPPER BUSS BAR - PROVIDED BY CONTRACTOR

COAX WATERPROOFING - FUSION TAPE TYPE	SCALE N.T.S.	5
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GROUND ROD DETAIL SCALE N.T.S. 9

GROUND BUSS BAR DETAIL

SCALE: N.T.S.

13

EQUIPMENT GROUNDING SCHEMATIC DTL. SCALE: NTS 17

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND ALL OTHER APPLICABLE LOCAL CODES.
2. CONTRACTOR SHALL OBTAIN ALL PERMITS, PAY ALL PERMIT FEES, AND SCHEDULE ALL REQUIRED INSPECTIONS. CONTRACTOR SHALL OBTAIN LOCAL POWER COMPANY APPROVAL AND COORDINATE SERVICE ENTRANCE REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY SERVICE LOCATIONS AND CONTACT PROJECT MANAGER WITH DISCREPANCIES FROM PLAN.
4. CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIAL DESCRIBED ON THIS DRAWING, AND ALL ITEMS INCIDENTAL TO COMPLETING AND PRESENTING THIS PROJECT AS FULLY OPERATIONAL. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED.
5. CONDUCTORS SHALL BE INSTALLED IN SCHEDULE 40 CONDUIT (UNDERGROUND) AND IMC OR SCH 80 PVC CONDUIT ABOVE GROUND.
6. USE 2" OR 2 1/2" SCHEDULE 40 PVC UNDERGROUND CONDUIT WITH FULL WIRE BUNDLE PROTECTION. ELECTRICAL UTILITY DEMARCATION POINT AND APS JUNCTION BOX. CONTRACTOR SHALL DETERMINE REQUIRED NUMBER AND LOCATION OF JUNCTION BOXES PER UTILITY STANDARDS.
7. USE 1" SCHEDULE 40 PVC CONDUIT AND APPROPRIATE FITTINGS TO ENTER NSR LOAD CENTER.
8. CONTRACTOR TO NOTIFY ALL APPROPRIATE PARTIES PRIOR TO CONSTRUCTION AND SHALL PROVIDE AND MAINTAIN A TRAFFIC CONTROL PLAN PER NDOT REQUIREMENTS.
9. CONTRACTOR TO LOCATE ALL UTILITIES IN PROJECT AREA PRIOR TO CONSTRUCTION THROUGH BLU STAKE.
10. VERIFY DEPTH OF EXISTING UTILITY CROSSING POINTS VIA APPROVED POT-Holing METHODS AND NOTE ON PLAN SETS FOR AS-BUILT CLOSE OUT.
11. NOTE DEPTH AND LOCATIONS OF ALL INSTALLED UTILITIES ON AS-BUILT REDLINE DRAWINGS.
12. IF EXISTING IRRIGATION LINES ARE ENCOUNTERED, CONTRACTOR SHALL NOTIFY OWNER PRIOR TO ANY MODIFICATION.
13. CONTRACTOR SHALL NOT RELOCATE PROPOSED EQUIPMENT OR POLE LOCATIONS WITHOUT WRITTEN APPROVAL FROM CROWN CASTLE AND PROJECT ENGINEERS.
14. MATERIAL SUBSTITUTIONS ARE SUBJECT TO CROWN CASTLE AND ENGINEERING REVIEW PRIOR TO CONSTRUCTION.

PANEL A		FED FROM TRANSFORMER NEMA 3R	VOLTS 240/120V 2P 3W BUS AMPS 60 NEUTRAL 100%	AIC (REFER TO FAULT CALC) MAIN BKR 60 LUGS STANDARD					
NO. CB		CIRCUIT DESCRIPTION	KVA LOAD		NO. CB		CIRCUIT DESCRIPTION	KVA LOAD	
			A	B				A	B
1	60/1	MAIN	0.00		2	20/1	RADIO EQUIPMENT	1.05	
3	60/1	MAIN		0.00	4	20/1	RADIO EQUIPMENT		1.05
5	-	SPACE	0.00		6	20/1	SPARE	0.00	
7	-	SPACE		0.00	8	-	SPACE		0.00
							TOTAL CONNECTED KVA BY PHASE	1.05	1.05
							TOTAL CONNECTED AMPS BY PHASE	11.8	11.8
		<u>CONN. KVA</u>	<u>CALC KVA</u>				<u>CONN. KVA</u>	<u>CALC KVA</u>	
LIGHTING	0		0	(125%)	CONTINUOUS		0	0	(125%)
LARGEST MOTOR	0		0	(125%)	HEATING		0	0	(100%)
OTHER MOTORS	0		0	(125%)	NONCONTINUOUS		2.1	2.1	(100%)
RECEPTACLES	0		0		TOTAL KVA		2.82	2.82	
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <b>PER NEC 210.4(B)</b>            PROVIDE COMMON TRIP HANDLES FOR ALL MULTI-CIRCUIT CONDUIT RUNS.         </div>									

ELECTRICAL NOTES	SCALE: NONE	6
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ELECTRICAL PANEL SCHEDULES	SCALE: NTS	14
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PART 2 - EXECUTION	
2.1 EXECUTION	
A.	Provide (1) main ground from the antenna mounting bracket at the top of the pole, to the main ground bus bar (TMGB) (location defined below). Main vertical ground shall consist of a #2 solid bare copper cable. Said ground shall be protected by a PVC U-Guard to the top of the pole and stapled every 24" with corrosion resistant (dipped galvanized) staples.
B.	#2 solid bare copper cable is highly susceptible to theft and may be a bit excessive to run to top of pole. #2 tin coated is recommended by Ops. As it's cheaper and less likely to be stolen. Buss Bars may also be tin coated to make them less susceptible to theft.
C.	Provide (1) main ground from the antenna mounting bracket at the top of the pole, to the main ground bus bar (TMGB) (location defined below) to a ground rod at the pole base. Main ground vertical shall consist of a #2 solid bare copper cable. Said ground shall be protected by a PVC U-Guard to the bottom of the pole and stapled every 24" with corrosion resistant (dipped galvanized) staples.
D.	Ground rod shall be 8' in depth minimum and copper clad.
E.	Ground rod shall be placed per NEC code with regards to depth and distance from wood pole.
F.	Ground rod shall be buried minimum of 30" below grade.
G.	#2 ground shall be attached directly to the ground rod via Cad Weld.
H.	Main ground vertical shall be attached directly to a ground bus bar (TMGB) mounted to the face of the utility pole. Method of contact shall be 2 hole slotted lug (Brown) to the main ground bus (TMGB) on the left or top slot depending on the orientation of the TMGB.
I.	Main ground vertical to the Antenna mounting bracket shall be attached directly to the Antenna Bracket via a self-tapping bolt or screw. A washer must be added to the thru bolt or screw to avoid damage to the lug while maintaining a secure bond.
J.	TMGB shall be mounted above the Charles' cabinet below the RRH standoff, directly to the wood pole structure.
K.	All pole mounted devices, including but not limited to: (antenna mounts and antennas, mounting brackets, cabinets) shall be connected to the TMGB with a #6 copper stranded cable UV coated and green in color.
L.	All pole mounted devices, including but not limited to: (antenna mounts and antennas, mounting brackets, cabinets) shall be connected to the TMGB using compression type, 2 hole connector lugs.
1.	Connector lugs must attach to the bus bar with two holes facing up and out with the bolt heads are on the back side of the bus bar.
2.	Stacking of connector lugs is prohibited.
3.	Placement of connector lugs on front and rear face of grounding bar is permitted.
4.	Any modifications to the connector lugs is prohibited, including but not limited to grinding, cutting or bending.
5.	Connector lugs must be placed with even spacing and must not come in contact with another connector lug.
6.	Slotted side of the connector lug should be placed on the slotted side of the bus bar.
7.	All connector lugs shall have two (2) compressions per lug.
8.	All connector lugs must have NO-OX applied to any sides which contact another metal to retard oxidation including and especially the conductor in the compression end.
9.	All connector lugs must be properly sealed from weather with heat shrink.
10.	All connector lugs must be attached using 3/8" hardware x 2 per each lug and in the following manner:
a.	Flat Washer on the backside of the lug
b.	Bolt thru the lug hole facing outward.
c.	Flat Washer on the front side of the lug.
d.	Lock Washer on the front side of the flat washer
e.	Nut on the bolt, turned to "three threads showing at maximum torque"
f.	All nuts on connector bolts must be tightened so that the lock washers are completely compressed.
M.	No mechanical connections are acceptable except in the event of mechanical fittings being a integral part of the product from the factory. ie: Charles cabinet #6 ground lugs on each side of the cabinet.
N.	Excess welds on CadWelds must be ground off to a safe taper.
O.	All cad welds must be coated with Zinc-IL or like product to prevent oxidation.
P.	All exposed metallic surfaces must be sprayed with a protective coating such as Zinc-IL.
Q.	All fittings exposed to environment must be sealed with shrink wrap.
1.	Exposed "shiners" conductors are prohibited if in excess of 1/16th of an inch.
PART 3 - TESTING AND DOCUMENTATION	
3.1 TESTING	
3.2 DOCUMENTATION	5 Ohms to ground is required for acceptance. If 5 Ohms cannot be met with above requirements, additional ground rods will be added to the field until 5 Ohms is achieved.
A.	Photos of the tests are required as well as test results in formal document format. Submit result of test to CC Construction Manager prior to final walkthrough. Submit all photos and tests with closeout package per Section 017700 - Closeout Procedures and Required Documents.

GROUNDING SPECIFICATIONS

SCALE: NTS

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POWER FEEDER SCHEDULE			
LENGTH	SIZE (AWG/KCMIL)	GROUND SIZE	CONDUIT SIZE
320'	2	6	2"
380'	1	4	2"
470'	1/0	2	2"
550'	2/0	2	2"
680'	3/0	2	2"
800'	4/0	1	2"
920'	250	1/0	2 - 1/4"
1050'	900	2/0	2-1/2"

FEEDER SCHEDULE	SCALE: NTS	15
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GROUNDING SCHEMATIC - METAL POLE SCALE: NTS 19

Fault Point	Panel Transformer	Source (Fault Point)	Source I (amps)	Conduit Type	Wire/g
1	UTILITY XFMR/FRYS PEDESTAL		22000		
2	Panel-A @ 20'	1	22000	NM	1 Se
3	Panel-A @ 100'	1	22000	NM	1 Se
3	Panel-A @ 150'	1	22000	NM	1 Se
4	Panel-A @ 200'	1	22000	NM	1 Se

Bus Size	'C' value	E (volts)	L (length)	f	M	Isc	A/C Rating
		240				22000	
s) of 2	3730	240	20	0.851	0.54	11884	22,000
s) of 2	3730	240	100	4.256	0.19	4185	10,000
s) of 2	3730	240	150	6.385	0.14	2979	10,000
s) of 2	3730	240	200	8.513	0.11	2313	10,000

 <div style="display: inline-block; vertical-align: middle; text-align: left;"><b>CROWN CASTLE</b> <small>Engineering Through Time. The commitment to excellence.</small></div>		
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3334 N. 20TH STREET PHOENIX, ARIZONA 85016 ph: 480.264.0829 fax: 480.264.0163		
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<b>RELEASE</b>		
DATE	SUBMITTAL	
06.04.2018	1ST SUBMITTAL	
<b>REVISIONS</b>		
NO.	DATE	COMMENT
<b>PROJECT NAME</b>		
T.M.O. BELLEVUE		
<b>NODE NUMBER</b>		
<b>NODE ADDRESS</b>		
<b>SHIFT JOB NUMBER</b>		<b>IN HOUSE</b>
170603		DRAWN BY: KOF CHECKED BY: CA
<b>SHEET TITLE</b>		
ELECTRICAL DETAILS		
<b>SHEET NUMBER</b>		
D1.2		
<b>PAGE</b>		
5 OF 5		
PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"		